The Future of Education in Defence and Security in Relation to the New Security Environment

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Abstract

The future development of Armed, Police and various Crisis Response Forces will take place in an environment of increasing needs and resource shortages. The security environment could be characterized as dynamic, with multiple and diverse threats that will need to be addressed with adequate capabilities. The new threats like economic warfare, cyber warfare, unconventional threats, etc. and the related crisis during and afterwards require a diverse set of capabilities to cope with. Since no organization is able to develop such capabilities on its own, this will require much better cooperation of staff with different Training and Education (E&T) in order to be efficient during a crisis when shortage of time, lack of resources and rapidly changing environment are present. One of the cheapest and most safe ways to train and educate the needed personnel are CAX and various simulations of real time events, that will allow for the various forces to work together in a controlled environment, to learn for and from each other and in such a way to develop the capability for cooperation that will be an important success factor when a real crisis is present.

Keywords: *Future education, defence, security, CAX, M&S.*

1. Introduction.

The new threats arising from the security environment like economic warfare, cyber warfare, unconventional threats, etc. and the related crisis during and afterwards require a diverse set of capabilities to cope with. Since no organization is able to develop such capabilities on its own, this will require much better cooperation of staff with different education and training in order to be efficient during a crisis when shortage of time, lack of resources and rapidly changing environment are present. One of the cheapest and most safe ways to train and educate the needed personnel are CAX (CAX) and various simulations of real time events, that will allow for the various forces to work together in a controlled environment, to learn for and from each other and in such a way to develop the capability for cooperation that will be an important success factor when a real crisis is present.

2. CAX in Defence and Security

A crisis in the current security environment could be linked to various different aspects put all together in one event. For example a terrorist act will need much more capabilities than just simple armed forces retaliation. It may require medical team, intelligence, technical expertise, fire brigades, etc. A flood or heavy snow may require more than civil security forces or fire brigades – it may require military forces to assist with heavy machinery, bridging devices, man power, communications. These examples show clearly that the concepts of defence and security are now changed and the lines between the missions of the army, the police and other crisis response forces are no more that clear. There is no more a clear frontline in war, just as there is no more a clear separation of duties between all defence and security forces within a country or an alliance. The ever expanding need for capabilities and the lack of resources poses various problems with the future development of these structures. Capabilities require both knowledge and assets and assets are expensive. This results in various questions such as:

Is there a need to procure heavy machinery for the civil security forces, when the military already have it and are not using them all the time?

Do we have to develop communication capabilities for all the crisis response forces when the country already has them within the military or the intelligence?

Do we need an open water rescue unit within the military since we have coastguard?

The logical answer is No, but it should be taken into account that the personnel of these forces and services is trained and educated to cope with different situations and as such they have different knowledge and perceptions, different tactics and different command and control procedures.

It would be perfect if the capabilities of the police, army, civil security, medical teams, rescue services, fire brigade, intelligence, etc. could be united in some situations, but for this to happen more (T&E) is required so that synergy could be achieved and not chaos.

Compared to real life training, Computer Assisted exercises (CAX) and modelling and simulation (M&S) are safe and cost effective solutions. Using these techniques will allow for the various forces to work together in a controlled environment, to learn for and from each other and in such a way to develop the capability for cooperation without exposing them unprepared in a real life threatening situations.

3. What is CAX (CAX)?

A CAX is a type of synthetic exercise where forces are generated, moved and managed in a simulation environment. Therefore, CAX support is often thought limited to installing and running a military constructive simulation during a command post exercise. In this perception CAX support is to replace or to help response cells, high level commands, low level commands by running a set of stochastic processes to find out the possible outcomes of the decisions or requests coming from the training audience [1].

CAX is an exercise using computer models designed to place the command and control element of a headquarters in a realistic, stressful combat-like environment to stimulate decision-making, command and control staff interaction and coordination [2].

CAX is one of the valuable tools for enhancing the effectiveness of training and achieving interoperability at lower cost and de-creased risks in comparison to field exercises [3].

CAX use real time computer simulated operational environment for improvement of staff readiness in operations planning and conducting and decision making. They are cost-efficient and a highly effective means of T&E that could put the trainees as close to the real life experience as possible without the danger and the consequences of wrong decisions. Through CAX, various participants from all various agencies and locations and even nationalities could be trained and educated to deal with a certain set of events by working together.

CAX have the structure and organization that provide realistic staff training. Each CAX is designed in accordance with the training objectives and for particular set of trainees, taking into account the actual tasks they will have to complete in real life situations.

In all CAX a set of simulation software is used depending on the nature of training. The software must be able to design and model a wide range of complex situations, and in turn to conduct training and evaluations of all trainees, no matter if they are individuals or groups, that make decisions within the different kind of forces and/or services and/or institutions involved. For the exercise to be as effective as possible the training environment has to have at least the following capabilities:

- to simulate the development of certain events in such a detail, that decisions could be made;
- to change the simulation in real time according to the decisions and actions of the different participants;
- to simulate command and control systems and functions.

The training activities should replicate or simulate operational circumstances and environments as realistically as possible. Training situations should be challenging, complex, ambiguous and unpredictable. This will ensure the application of knowledge and skills to the performance standard required on operations has been achieved. Safety and resource limitations generally mean that training cannot be conducted in every potential operational circumstance; therefore, commanders need to optimise training opportunities by selecting challenging scenarios that are representative. Simulation are used to enhance realism in training. Where appropriate, training should involve joint, multi-agency and multinational participants[4].

CAXs are performed in special training centres, which are designed in such a way that the physical environment completes the simulation from the software and allows for more real time experience if necessary. Such training centres are specialised in different types of T&E for different types of participants. Using such an environment is cost-effective, compared to a field training, but CAX training centres are not that cheap and easy to develop and maintain. Depending on the types of education and training there are high demands considering the simulation software, IT systems, physical infrastructure and most importantly the personnel of the training centre.

4. What are the benefits of CAX?

Training in a controlled environment has its weaknesses because each model and each simulation is in some way different from the reality. A model or a simulation includes some, not all, of the characteristics of the modelled object or an event and if not constructed well, if important characteristics are omitted, the model or the simulation could become inadequate to the task at hand. In a real situation there are many factors that affect our decisions and actions that cannot be

simulated. Such factors are emotions, stress, fear, etc. Nevertheless using CAX with suitable models and simulations has its benefits, especially in the field of defence and security:

- The T&E in the controlled environment are safe. In the field of security and defence almost every situation is life threatening. CAX removes this and allows for much clearer thinking during the decision making process.
- The simulated events occur much faster. A real crisis could take days, months or even years to develop. In the simulations it takes only minutes.
- The consequences from our mistakes are not real. In a crisis situation a wrong decision could lead to loss of expensive equipment, injured people or even death. Such consequences are not acceptable, especially for the purpose of T&E.
- Many situations and events cannot be recreated in real life. It is impossible to recreate a real snowstorm, a hurricane, a tsunami, etc. CAX allows for such events to be simulated and the trainees to learn to react accordingly if such an event ever occurs.
- Wrong decisions and actions can be taken back. During crisis a wrong decision can lead to losses that cannot be recovered. In the CAX environment a series of wrong decisions could be taken, just to analyse the results, without the real consequences.
- It is cost-efficient. In CAX the destruction of property, wear or loss of equipment, operational costs, loss of life, etc. is only numbers. The costs for building and maintaining a CAX centre cannot compare to the costs for building real environment or regularly training with real people and equipment.

The T&E with CAX will never fully substitute the real life experience, but for sure they can provide valuable knowledge to the trainees, so that they will be much more prepared if ever this knowledge is necessary.

Allowing various units from different institutions to train in a controlled environment, that simulates the real life experience as close as possible will definitely improve their cooperation in the field. Putting decision makers from different defence and security forces and services and having them work together on a certain crisis or event will provide valuable lessons learnt for capability sharing, ways of communication, suitable command and control chain. The personnel will be familiar with each other's actions and decisions, which means less surprises and more synergy in a real situation, when they are working together.

Conclusion

There is no doubt in the usefulness of CAX since it has become an indispensable part of the regular NATO training and operation exercises. It is cost-efficient, highly effective and provide safe environment. The more and more developing software industry turns the used M&S software in a state of the art educational tool which in turns makes CAX part of the future in education and training.

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